

WHAT IS CLAIMED IS:

1 1. An apparatus for transmitting and receiving radio signals in a pico-BTS (Base station
2 Transceiver System), comprising:

3 a plurality of antennas for transmitting and receiving the radio signals, installed in
4 predetermined positions; and

5 a plurality of repeaters connected to corresponding ones of said antennas, for controlling
6 levels of the transmission and reception signals to a predetermined level.

1 2. The apparatus as claimed in claim 1, further comprising a plurality of bi-directional
2 amplifiers for compensating for a signal loss, installed in predetermined positions between the
3 repeaters.

1 3. The apparatus as claimed in claim 1, wherein the antennas each comprise a microstrip
2 patch antenna included in the corresponding repeater.

1 4. An apparatus for transmitting and receiving radio signals in a pico-BTS (Base station
2 Transceiver System) with at least one operating frequency, comprising:

3 at least one radio unit for said at least one operating frequency;

4 a cable front-end unit for combining the operating frequency output from the radio unit, and
5 distributing a received operation frequency to the radio unit;

6 a plurality of antennas for transmitting and receiving the radio signals, installed in

7 predetermined positions; and

8 a plurality of repeaters connected to the cable front-end unit through a coaxial cable and a
9 plurality of dividers, said repeaters being also connected to corresponding ones of said antennas to
10 control levels of the transmission and reception signals to a predetermined level.

1 5. The apparatus as claimed in claim 4, further comprising a plurality of bi-directional
2 amplifiers for compensating for a signal loss, installed in predetermined positions between the
3 repeaters.

1 6. The apparatus as claimed in claim 4, wherein the antennas each comprise a microstrip
2 patch antenna included in the corresponding repeater.

1 7. An apparatus for transmitting and receiving radio signals in a pico-BTS (Base station
2 Transceiver System) having three assigned frequencies, comprising:

3 a plurality of radio unit for transmitting and receiving signals on said three assigned
4 frequencies;

5 a cable front-end unit for combining transmission signals transmitted on the three assigned
6 frequencies output from the radio units, and dividing a received combination signal to separate
7 reception signals received on the three assigned frequencies for distribution to the radio units;

8 a plurality of dividers serially distributed along a coaxial cable connected to said cable front-
9 end unit;

10 a plurality of antennas for transmitting and receiving radio signals, installed in predetermined

11 positions; and

12 a plurality of repeaters, each being connected between a corresponding one of said plurality
13 of dividers and a corresponding one of said plurality of antennas, to control levels of the
14 transmission and reception signals to a predetermined level.

1 8. The apparatus as claimed in claim 7, wherein the antennas each comprise a microstrip
2 patch antenna included in the corresponding repeater.

1 9. The apparatus as claimed in claim 7, further comprising a plurality of bi-directional
2 amplifiers serially installed along said coaxial cable in predetermined positions between certain ones
3 of said dividers for compensating for a signal loss.

1 10. The apparatus as claimed in claim 7, wherein said a cable front-end unit comprises:
2 a combiner for combining said transmission signals transmitted on the three assigned
3 frequencies output from the radio units; and
4 a divider for dividing said received combination signal to separate reception signals received
5 on the three assigned frequencies for distribution to the radio units.

1 11. The apparatus as claimed in claim 10, wherein said a cable front-end unit further
2 comprises a duplexer, said duplexer comprising:
3 a first bandpass filter for filtering the transmission signals to be applied to said coaxial cable;
4 and

5 a second bandpass filter for filtering the reception signals received from said coaxial cable.

1 12. The apparatus as claimed in claim 11, wherein the antennas each comprise a
2 microstrip patch antenna included in the corresponding repeater.

1 13. The apparatus as claimed in claim 12, further comprising a plurality of bi-directional
2 amplifiers serially installed along said coaxial cable in predetermined positions between certain ones
3 of said dividers for compensating for a signal loss.

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